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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,075	12/11/2003	John S. Tingey	71746 CCD	1258
7590 08/11/2004			EXAMINER	
Christopher C. Dunham c/o Cooper & Dunham LLP 1185 Ave. of the Americas New York, NY 10036			LIN, ING HOUR	
			ART UNIT	PAPER NUMBER
			1725	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/735,075	Applicant(s) TINGEY ET AL.	
	Examiner Ing-Hour Lin	Art Unit 1725	

S.C.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 11 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0802</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 11 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 11, line 3, the meaning of the abbreviation of "P.I.D." is not supported in the specification. In claim 18, last line, "the trough lining" lack antecedent basis.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-3, 5-8, 10-11, 13-14 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eckert in view of Uhm et al.

Eckert (col. 5, lines 19+) teaches the claimed heated trough and method for heating molten metal being conveyed in the trough, comprising an outer shell 12, an insulated layer 20 filling the outer shell, a conductive refractory trough body 24 made of silicon carbide and graphite (col. 5, lines 54+) and a heating element 32 positioned in the insulating layer and adjacent to the side walls of the trough. Further, Eckert teaches the use thermocouple and P.I.D. systems for controlling temperature of molten metal and output of heat from the heating element (col. 8, lines 7+). Eckert fails to teach the use of spaced air gap between the heating element and the trough body.

However, Uhm et al (col. 1, lines 66+) teach the use of spaced air gap G between the heating element 22 and the trough body (heated preform) P for the purpose of better heating the trough body (heated preform). Further, the air gap is in the range of 3.5 to 7.5 mm and a barrier graphite liner 12 is positioned between the trough body (heated preform) P and heating element 22 for the purpose of providing heating efficiency and a longer life of the heating element. It would have been obvious to one having ordinary skill in the art to provide Eckert the use of spaced air gap between the heating element and the trough body shielded with a barrier graphite liner 12 as taught by Uhm et al in order to effectively heat and deliver the molten metal being conveyed in the trough.

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6. Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eckert in view of Uhm et al and further in view of Rauch.

Eckert in view of Uhm et al fail to teach the use of positioning the heating element adjacent the bottom end of the trough.

However, Rauch (col. 2, lines 66+) teaches the use of positioning the heating element 3 adjacent the bottom end of the trough (furnace insert) 4 for the purpose of effectively heating the molten metal being conveyed in the trough. It would have been obvious to one having ordinary skill in the art to provide Eckert in view of Uhm et al the use of positioning the heating element adjacent the bottom end of the trough as taught by Rauch in order effectively heat the molten metal being conveyed in the trough.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eckert in view of Uhm et al and further in view of Darnfors.

Eckert in view of Uhm et al fail to teach the use of Fe-Ni-Cr alloy for the metal intrusion barrier.

However, Darnfors (col. 2, lines 66+) teaches the use of Fe-Ni-Cr alloy for the purpose of effectively providing an improved combined material properties of oxidation and creep fracture resistance. It would have been obvious to one having ordinary skill in the art to provide Eckert in view of Uhm et al the use of Fe-Ni-Cr alloy the metal intrusion barrier as taught by Darnfors in order effectively provide improved combined material properties of oxidation and creep fracture resistance for the metal intrusion barrier.

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8. Claims 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eckert in view of Uhm et al and further in view of Yamura et al.

Eckert in view of Uhm et al fail to teach the use of sensor for detecting the leakage of molten metal.

However, Yamura et al (col. 2, lines 43+) teach the use of detecting sensor 6, 16 of the electric conductivity (inverse of resistance) type for the purpose of detecting the leakage of molten metal being conveyed in the trough (furnace). It would have been obvious to one having ordinary skill in the art to provide Eckert in view of Uhm et al the use of sensor as taught by Yamura et al in order effectively detect the leakage of molten metal of the trough.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (8:00-5:30) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*9.12.1.*

I.-H. Lin

8-2-04

**KILEY S. STONER**  
**PRIMARY EXAMINER**

*Kiley Stoner 8/9/04*